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Broadband Regulation and Government Investment in Nationwide UltraFast Fibre Broadband Networks: evidence from New Zealand

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Abstract

New Zealand stands apart from its OECD counterparts as one of the few countries pursuing government investment in a nationwide fibre network. As in the past, when it stood apart with its 'light-handed' regulatory approach, New Zealand's experience can inform other jurisdictions. This paper contributes by documenting and analysing the chronological history of the key political, regulatory and industry actions taken to implement the government fibre investment policy, between 2008 and September 2013.

The chronology reveals an industry currently in considerable disarray. A critical political economy and industrial organisation-based analysis proposes that the incremental and path-dependent nature of the evolution of New Zealand's industry-specific regulatory environment resulted in a set of arrangements ill-suited to oversee the transition from a copper-based to a fibre-based fixed line access infrastructure. It contends that the current disarray was an inevitable outcome of a lack of co-ordinated oversight of sector policy and governance that allowed the fibre network investment to proceed without clearly-articu`lated overarching and forward-looking competition and regulation policies integrating legacy regulations and investments into the fundamentally different environment created by the government's revolutionary fibre policy. The result was the fragmentation of regulatory responsibility across many parties on the basis of network technology type. Consequently, each pursued its own objectives in isolation from the others, which led to a crisis in December 2012 when a regulatory decision about copper prices threatened the viability of the fibre project. Absence of clear and co-ordinated leadership of sector strategy in response to the crisis has resulted in the government's integrity being undermined and a loss of confidence amongst (notably foreign) private sector investors.

The analysis suggests that the amendments currently proposed to remedy the immediate crisis address only the competitive distortion created by government investment. They do not provide a forward-looking policy and regulatory framework that takes account of the complex realities of a broadband market characterised by the concurrent but scattered operation of many different network types at different stages of their life cycles across multiple markets with different geographic and consumer bases.

"Between the idea
And the reality
Between the motion
And the act
Falls the Shadow"
T S Eliot, The Hollow Men

During the 1980s and 1990s, New Zealand stood apart from the rest of the OECD for its extensive programme of market liberalisation and privatisation, and its concomitant 'light-handed' approach to regulating network industries (Evans, Grimes Wilkinson & Teece, 1996). Notably, it was one of the first countries to corporatise and fully privatise its incumbent telecommunications operator, and was the only OECD jurisdiction where telecommunications markets were governed solely by Competition Law (under the Commerce Act 1986) unaided by explicit industry-specific regulation (albeit that a number of contractual undertakings between the Government and the incumbent operator Telecom New Zealand constrained some of the firm's activities) (Howell, 2007; Hausman & Sidak, 2005; Boles de Boer & Evans, 1996). As New Zealand's small scale places limits on the number of competitive entrants that can be sustained in most markets[1], the emphasis was on the pursuit of efficiency (in both its static and dynamic forms) rather than on the pursuit of competition measured by the number of participants in the market and their market shares (Evans et al., 1996). These unique arrangements attracted much international interest as they provided a live counterfactual to the industry-specific, competition-focused regulatory models (e.g. access regulation, local loop unbundling) prevailing in most other OECD countries (OECD, 2009; Howell, 2007; Howell, 2012a).

Starting in 2001, however, a series of industry-specific regulations began to be imposed on the New Zealand industry[2]. Whilst many justifications have been provided for the rapid retreat from competition law-based governance[3], a common theme has been a desire to align the institutional artefacts of New Zealand's regulatory arrangements with the instruments of

[1] The three-firm concentration ratio in New Zealand exceeds 85% in all significant industries, not just those with natural monopoly tendencies (Arnold, Boles de Boer & Evans, 2004).
[2] For a comprehensive list, see Sadowski & Howell (2012).
[3] With the exception of the 2000 Ministerial Inquiry where regulated call termination rates and mandatory wholesale access to voice services were recommended (subsequently mandated in the Telecommunications Act 2001) and the 2003 Telecommunications Commissioner's statutory inquiry into the feasibility of Local Loop Unbundling, which recommended only bitstream unbundling be mandated, none of the changes to the regulatory arrangements have been accompanied by any rigorous empirical economic analysis of the proposed instruments on either the industry or the government. Indeed, the Regulatory Impact Analysis for the 2006 changes (which resulted in the share price of the incumbent falling by more than 30%) states that there would be no fiscal impact of the policy, despite the government being the owner of many of the indexed funds which made up the majority of Telecom's investors (Howell, 2007; 2010).

prevailing OECD regulatory orthodoxy[4]: mandatory regulated termination rates; 'open access' for commercial competitors at regulated prices to many different elements of the incumbent's infrastructure and services (mostly in the 'last mile' connecting to end user premises, but also associated products and services such as backhaul); and the promotion of competition (measured as the market share of competitors to the incumbent) as the primary regulatory objective. From 2006 at least, explicit political imperatives have ensured that the pursuit of short-term retail competition and politically-motivated legislated changes to industry structure have prevailed over longer-term efficiency considerations. Cautions regarding the trade-offs between increased regulatory intensity and the dynamic incentives for the incumbent to invest in underlying network upgrades[5], such as Fibre-to-the-Node (FTTN) ("cabinetisation"), have been explicitly subjugated to desires to increase constraints on the incumbent's perceived past and potential future abuses of market power (Howell, 2010). Extensive politicisation of sector direction culminated in 2011 with the incumbent being required to structurally separate into a network operations firm and a retail firm in order to participate in the government-funded Fibre-to-the-Home (FTTH) Ultrafast Broadband (UFB) initiative[6].

In the space of only a few years, the most lightly-regulated OECD telecommunications jurisdiction has become the most aggressively-regulated[7]. Yet despite explicit attempts to become a follower of rather than a flag-bearer for international regulatory trends, New Zealand once again stands apart from the rest of the OECD in its telecommunications policies, ownership profiles and

[4] Both the Ministerial Inquiry in 2000 and the 'Industry Stocktake' undertaken by the Ministry of Economic Development in 2006 were conducted under terms of reference identifying an imperative to garner the benefits of international regulatory 'best practice' (Howell, 2007).

[5] For a recent discussion of these issues in a New Zealand context, see Patterson (2013).

[6] The UFB initiative was a key part of the 2008 general election manifesto of the political party that had led the parliamentary opposition during the earlier retreat from 'light-handed' regulatory principles. Given that the incumbent had already entered into undertakings with the Government to invest in a nation-wide FTTN network providing ADSL broadband access at a minimum headline speed of 20Mbps to all communities with 500 or more connections, it is not clear what investment 'problem' the FTTH network was addressing. Howell (2012) evaluates several possible explanations, and concludes that the most plausible reason was simply "keeping up with the neighbours" – notably Australia, whose government-funded NBN was a key platform of the Australian Labor party that prevailed at the 2007 election.

[7] Huigen & Cave (2008: 714) categorise OECD telecommunications policy into three empirical models: "distinctly deregulatory" as observed principally in the United States; an "interventionist approach" in Japan and Korea and the "third or middle way" "focused on regulatory intervention based upon competition analysis which is supposed to be devoid of any influence of industrial policy", as evidenced in the European Union. . De Streel (2008: 726) identifies four roles of the state in telecommunications markets along a spectrum from a hands-off "Schumpeterian" paradigm protecting innovation and possibly allowing creative monopoly via "Neo-classical" (price regulation) and "Soft Industrial Policy" (promoting specific business model entry) to direct hands-on intervention where the government promotes specific operators or directly offers services itself, in a "Hard Industrial Policy" paradigm. Australia's recent policy can be best described as "third or middle way" (Huigen & Cave) or "soft industrial policy" (de Streel). By contrast, New Zealand began the 1990s firmly at the "deregulatory" (arguably even "Schumpeterian") end of the spectrum, but transitioned in the 2000s through to a "third or middle way" "soft industrial policy". This progression has been driven in large part by a desire for international regulatory conformity rather than economic efficiency objectives (Howell 2010). In particular, the Telecommunications Act 2006 was very strongly influenced by the OECD endorsement of the European policy prescription (Howell, 2006).

regulatory arrangements. It is the only jurisdiction proceeding with the deployment of a nationwide[8] government-subsidised FTTH network delivered using Public-Private Partnership (PPP) instruments (Sadowski & Howell, 2012), in a regulatory context requiring the mandatory structural separation of both the legacy copper and the frontier fibre infrastructures (Howell, 2012). The New Zealand arrangements differ from those governing the deployment of FTTH networks in Japan and Korea, which were undertaken by vertically integrated firms. They differ from Australia, where the government alone owns the newly-deployed (albeit structurally separate) fibre assets, and the arrangements described as 'structural separation' of the legacy copper operator are administrative obligations phased in across time and which stop short of full ownership and governance separation (Nicholls, 2013). As they make no detailed provisions for a rapid managed substitution of users from copper to fibre technologies and early decommissioning of the copper network to avoid inefficiencies arising from duplicate infrastructures operating simultaneously, the New Zealand arrangements also differ significantly from those in Australia[9], and non-OECD jurisdictions such as Singapore, Qatar and the UAE which also rely upon government subsidies for fibre deployment (Patterson, 2013). Once again, its unique approach to "ultrafast broadband policy make(s) New Zealand a model to watch" (Hooper, 2013: 3).

This paper examines New Zealand regulatory regime following the changes made to implement the government's FTTH policy and deploy the network. It uses a combination of political economy and industrial organisation analysis to identify key lessons for jurisdictions seeking to follow in New Zealand's footsteps by returning to a model where government assumes strategic control of the sector by intervening to accelerate the wide deployment of frontier FTTH networks.

Section One provides a chronological history of the key political, regulatory and industry actions taken between 2008 and September 2013 to implement the New Zealand FTTH policy. The chronology reveals an industry currently in considerable disarray. Section Two analyses the nature of the political and regulatory arrangements governing the industry over this time period. It suggests that the incremental and path-dependent nature of the evolution of New Zealand's industry-specific regulatory environment resulted in a set of regulatory arrangements ill-suited to

[8] Upon completion, the FTTH network will be available to approximately 75% of the population in thirty three geographic regions covering the most urbanised parts of the country (Howell, 2012). Of the remaining 25% of the population, around 16% will receive subsidised services over copper, wireless and satellite services by way of a separate Rural Broadband Initiative. No specific provisions have been made for the remaining 9% of the population (predominantly residents of small rural settlements such as Otaki (population 3500), although as part of the copper incumbent's Fibre to the Node (FTTN or 'cabinetisation) programme completed in 2011, these settlements already have access to ADSL services with headline speeds of at least 20Mbps.

[9] It is noted that the Australian general election on September 7 2013 resulted in a change in government that is likely to lead to some modifications to the Australian NBN policies that will likely see the copper network retained for longer than in the original proposals.

oversee the transition from a copper-based to a fibre-based fixed line access infrastructure. It contends that the current disarray was an inevitable consequence of an absence of strategic leadership providing clearly-articulated overarching competition and regulation policies to govern the imposition of the government's 'revolutionary' fibre investment on an industry whose prevailing regulatory infrastructure and investment commitments had evolved under assumptions that the private sector would control the sector's investment and technological direction. The consequence was a fragmentation of regulatory and operational responsibility across many parties, on the basis of network technology type, without any obvious point of central co-ordination. Each party pursued its own objectives in isolation from the others, which led to a crisis in December 2012 when a regulatory decision about copper prices threatened the viability of the fibre project. Absence of clear and co-ordinated leadership of sector strategy in response to the crisis has resulted in the government's integrity being undermined and a loss of confidence amongst private sector investors. Section Three proposes some ways forward for New Zealand. Section Four concludes with some 'lessons' for other countries seeking to emulate New Zealand's government-driven fibre strategy.

1. Government Investment in FTTH – a New Zealand Chronology

In the 2008 general election, a key plank of the opposition National Party's election manifesto was the provision of a $1.5 billion subsidy to build an FTTH network (estimated total cost between $5 and $6 billion) reaching 75% of New Zealand residences by 2018. Consistent with the party's other infrastructure policies (e.g. roading), it was proposed that the network would be delivered by way of public-private partnerships (PPPs). Whilst the political documentation provided few details, the estimated scope, costing and timeframe for the project appeared identical to those of a proposed pathway for New Zealand's broadband future offered in April 2008 by policy think-tank the New Zealand Institute[10]. The policy was justified principally on aspirational grounds and the fear that if an FTTH network was not built soon, New Zealand would rapidly get left behind its geographical neighbours and economic rivals[11]. An important contextual consideration was that in 2007, the Australian Labor Party had assumed office with an

[10] http://nzinitiative.org.nz/site/nzbr/files/Delivering_on_the_broadband_aspiration.pdf retrieved September 20 2013.

[11] For example, in 2010, New Zealand's then-Telecommunications Minister claimed that the country's new government-subsidised fibre network would underpin a "step change in the provision of broadband services" delivering economic growth, productivity improvements and "increase(ing) New Zealand's global competitiveness, particularly compared to other OECD countries" (http://www.med.govt.nz/templates/StandardSummary____40551.aspx accessed 20 October 2010). The step-change was predicated upon faster local access networks countering commercial disadvantages arising from the "tyranny of distance that's hampering businesses here compared to ones in the US that have access to a vast internal market" (http://computerworld.co.nz/news.nsf/news/lets-have-some-excitement-around-ufb-joyce accessed 20 October 2010).

election manifesto including substantial government investment in nationwide telecommunications infrastructure (Howell, 2012)[12].

Upon election to office, the new National-led minority government set about implementing its FTTH policy. Crown Fibre Holdings Ltd (CFH)[13], a Crown-owned company was established 'at arms-length' from the policy-focused Ministry of Economic Development (MED – subsequently the Ministry of Business, Innovation and Employment – MBIE) to oversee implementation of the FTTH policy, which came to be known as the Ultra-Fast Broadband (UFB) project. CFH states that it was: "established to manage the Government's $1.5 billion investment in Ultra-Fast Broadband infrastructure. The Government's objective is to accelerate the roll-out of Ultra-Fast Broadband (UFB) to 75 percent of New Zealanders over ten years, concentrating in the first six years on priority broadband users such as businesses, schools and health services, plus green field developments and certain tranches of residential areas (the UFB Objective). The Government's objective will be supported by investment in partnership with the private sector, and be directed to open-access infrastructure."[14]

All engineering design of the proposed fibre networks was undertaken by CFH, along with the design and implementation of the institutions and processes for the 'partnerships' with private operators constructing and operating the new infrastructures. The fundamental policy requirement was that the partner firms must be structurally separate network operators – that is, have no ownership interests in retail operations. It was made clear that if it was to be a partner in the UFB, the incumbent functionally-separated copper network operator Telecom New Zealand would be required to structurally separate its retail and network operations on its legacy copper infrastructure as well as its frontier fibre infrastructure.

1.1 Tendering Processes

In September 2009, having undertaken the requisite network design activities[15], CFH began the process of identifying potential private sector project partners. The 75% of the country where the UFB was to be built was divided into 33 distinct geographical regions. The initial proposal was for potential partners to tender for government funding to build a G-PON fibre network providing

[12] Albeit that at the time of the New Zealand election, the Australian policy was still predicated upon government investment in an FTTN upgrade to the copper network. The Australian FTTN policy was not substituted by the FTTH proposals until 2009 (Howell, 2012). The New Zealand government had already entered into an agreement for an FTTN network to be deployed in New Zealand in 2007 (Howell, 2010). The National Party proposal at the time would have seen New Zealand's nationwide network infrastructure 'leapfrogging' ahead of Australia's. Strong rivalry with near-neighbour and most significant economic partner Australia is a New Zealand cultural artefact often utilised for political and strategic advantage.

[13] http://www.crownfibre.govt.nz/

[14] http://www.crownfibre.govt.nz/about/

[15] The network design settled on was G-PON, with the UFB companies supplying access to 'dark fibre'

access to 'Layer 1' dark fibre in any or all of the 33 regions. The government funds would be placed in a new Crown-owned 'UFB Company" to underwrite the deployment of 'Layer 1' infrastructure past premises in an initial mutually-agreed area. The private UFB party would fund the 'drop' from the kerb to the premise when the customer wished to commence purchasing services on the FTTH network. At this point, the private partner would buy a share in the UFB company from the Crown and the relevant funds would be used to extend the network past further premises (the so-called 'capital recycling model')[16]. The UFB company would make the infrastructure available to either its own or competing 'Layer 2' operators on non-discriminatory terms (Heatley & Howell, 2010).

The so-called 'capital recycling model' was claimed to shield the private partner from financial risks associated with uptake uncertainty until such time as an end consumer was willing to start purchasing services on the new infrastructure. This 'insurance' was vital to private party participation, as the government's decision to subsidise and bring forward the deployment of the network had fundamentally altered the supply incentives, and it was quite unclear how this would affect demand. It also recognised the highly uncertain economic case for the realisation of benefits for end users (Howell & Grimes, 2010).

When tenders closed on January 29 2010, CFH had received 33 tenders from 18 individual respondents (Heatley & Howell, 2010a). A notable feature was that, apart from the incumbent, none of the tenderers was an existing participant in New Zealand's fixed line residential broadband markets. Significantly, neither the owner of the cable network serving New Zealand's second and third largest cities, nor the firms that had invested in unbundling infrastructure following the 2006 regulations enabling such activity, opted to participate. This occurred despite all being owners of considerable backhaul assets, some owning rival broadband access infrastructure (wireless, cellular, as well as fixed line) and collectively having a residential broadband market share of nearly fifty percent in a market rapidly approaching mature diffusion (Howell, 2012).

Despite the apparent 'success' of the tender process in attracting submissions, extensive concerns emerged from industry and academic interests[17] about the institutional and technological feasibility of the proposed arrangements. These concerns likely contributed to the reluctance of existing market participants to submit tenders. The G-PON design and the premise-specific investments required to enable the provision of 'Layer 2' infrastructure over UFB-owned 'Layer

[16]This is in effect a 'reverse PPP' where the government funds the infrastructure and gradually transfers ownership to the private party. Thus it differs from classic infrastructure PPPs where the private party funds the infrastructure which passes ultimately into government ownership (e.g. roads, schools, hospitals).

[17] The author contributed to a co-ordinated submission process undertaken by InternetNZ that identified fundamental problems with the initial institutional design – see Heatley & Howell (2010b).

1 dark fibre' rendered the ability to provide effective Layer 2 competition practically impossible. The functional separation of Layer 2 operations and non-discriminatory terms imposed on Layer 1 provision by the UFB firms also militated against the ability to utilise the welfare-enhancing price discrimination normally possible with vertically-integrated high fixed-cost infrastructures to increase total uptake and thereby reduce the average cost of supplying connections (Heatley & Howell, 2010c). Moreover, the structural separation obligation for successful tenderers contradicted the incentives offered under the 'ladder of investment'-based access regulations of the copper network instituted in 2006. Whilst the 'ladder' should have encouraged competitors to the incumbent to invest deeper into the copper network with a view to ultimately owning a competing (vertically-integrated) infrastructure (which would be fibre in the current technological context), stepping 'off the ladder' to full infrastructure ownership under the UFB proposals would require the competitors to abandon much of their existing business – most notably all retail customers acquired when taking the first 'steps' on the ladder (Heatley & Howell, 2010a; Howell, Meade & O'Connor, 2010). Consequently, only the incumbent (with large fixed and sunk costs likely to be stranded by the government-funded fibre network) and firms with no current exposure to the New Zealand telecommunications industry responded to the tender invitation.

In response to these concerns, on July 1 2010, the Minister announced that the terms under which the UFB companies would operate would be altered. UFB firms would now be required to supply bundled Layer 1 and 2 services to retailers, and expectations for the development of competitive Layer 2 supply were extinguished. A revised invitation to participate was issued on July 5, but was confined to those entities already having submitted tenders in January. This effectively eliminated existing sector investors who might find the revised arrangements more attractive[18] from further participation. Amendments to the tender conditions were released on July 8, with the expectation that the Minister would make recommendations of the successful firms to Cabinet in October.

1.2 Picking the Partners; Proposing Regulatory Policy

On September 9, CFH announced the preferred partner firms for UFB companies covering 18% of the national population (24% of the project population). Notably, the incumbent copper operator Telecom New Zealand was not one of the preferred partners for this substantial proportion of the project, despite having signalled a strong desire to obtain a single project-wide

[18] It may have been that firms with large backhaul investments (for example, state-owned enterprise Kordia) who had eschewed the initial tender because of the inability to use price discrimination to sell bundled Layer 1 and 2 services could have found the revised tender more attractive. However, they were unable to participate in the revised tender round, which eventually was used simply to discover prices from the original tenderers. .

contract. Its CEO had previously been cited as indicating that if a national contract was not possible, Telecom was unlikely to participate at all in the UFB project[19].

Although no announcements regarding Telecom's possible involvement in the balance of the project were made at this time, MED contemporaneously issued a discussion document seeking submissions on the regulatory implications of structural separation of Telecom New Zealand's network arm Chorus Ltd (submissions due on October 15). A puzzling feature of this discussion document was the presumption that the necessary changes to the regulatory regime to allow for the structural separation were to be considered independent of any decisions regarding the letting of UFB contracts. The foundation for this view appears to be the assumption that the necessary regulatory changes related to the copper network, which was a separate and distinct entity from the nascent fibre networks, meant that the regulatory regimes were also separate and distinct. That the existing heads of agreement already announced by CFH before the policy consultation began clearly signalled that the (separated) copper operator would be engaged in infrastructure competition in respect of broadband services provided to at least 18% of the broadband market did not appear to be considered significant. Indeed, the discussion document was specifically rejected the suggestion that the UFB contract process would have any material effect on the necessary changes to the regulatory provisions of the Telecommunications Act.

Consequently no consideration was given at this stage of the process to the fact that competitive strategies of copper network investors (including unbundling entrants as well as Chorus)[20] would likely be very different in those areas where Chorus was the fibre operator and those where it was not, and that the regulatory regime might have to be adjusted to take account of this. Indeed, the document is conspicuous for its absence of consideration of any aspects of interaction at the retail level. Its focus is on wholesale products, because these are the products and services subject to regulation in the Telecommunications Act 2001. Neither did the discussion document recognise that a different regulatory approach might be necessary in the

[19] http://www.computerworld.co.nz/article/489125/telecom_holds_national_solution_govt_fibre_network/

[20] Unbundling entrants with sunk investments in any area faced stranding of these assets as customers moved to copper. In those areas where Chorus was not the fibre operator, their competitive interests would be strongly aligned with Chorus to inhibit the transition to fibre. In those areas where Chorus was the fibre operator, the unbundling entrants would have less leverage over Chorus, but could still endeavour to recover their sunk copper costs by withholding investment in marketing fibre connections. It is notable that in September 2013, the second-largest retailer and substantial unbundling investor Vodafone has still not begun marketing fibre services. Telecom was also slow in beginning to market fibre. The business case for such tardiness is reinforced by the 'pricing equivalence' between wholesale copper connections and the low-end entry fibre product. As the margins to retailers are not materially different from selling these two products, and the diffusion of broadband in New Zealand is now quite mature, aggressively marketing fibre connections to individuals who are already customers incurs costs for no additional revenues. Hence it is economically rational for these retailers to exert minimal effort in fibre marketing. This is similar to the state of affairs in New Zealand in 2004, when the low retail price of entry level ADSL provided by Telecom, the regulated price for bitstream and the interconnection charges for PSTN calls left retailers better off by retaining existing customers on dial-up rather than ADSL (noting that in New Zealand, there was no PSTN charge to consumers for the first ten hours of dial-up internet access per month) (Howell, 2007).

areas covering 25% of the population where there were no plans for government-subsidised fibre networks to be deployed than in the 75% where the fibre would exist. The underlying assumption was that a single set of regulations governing a single regulated firm on a nationwide basis would continue.

It was not until May 24 2011 that the successful partners for the remaining 76% of the UFB areas were announced. At this point, it became clear that Chorus was the chosen partner for areas covering only 70% of the project, and would be required to be structurally separated from Telecom. Although Chorus was the partner chosen for New Zealand's most densely populated and populous region Auckland (1.5 million), the second-largest city Wellington (400,000), and much of provincial New Zealand, rival firms would supply the fibre networks in competition to Chorus copper in New Zealand's third-largest city Christchurch (363,000) (Enable), economically-vulnerable Whangarei (52,500) (NorthPower) and the central North Island area encompassing urban areas Hamilton (146,000) and New Plymouth (53,000) and provincial towns (e.g. Hawera – 11,500, Cambridge – 15,000) across the predominantly rural areas of Taranaki, the King Country and Waikato (WEL Networks). Existing operators of fully privately-funded fibre broadband services supplied to commercial premises, such as Unison (Napier-Hastings, population 151,000) and CityLink (Wellington) (many of whom had been participants in the tender process) would now expect to face competition from state-subsidised networks that would over-build their existing footprints. Indeed, Christchurch, where the DOCSIS 3.0-enabled cable network owned by TelstraClear (subsequently merged with Vodafone) was already providing commercial ultra-fast broadband services of up to 100Mbps, would have three broadband infrastructures, as would parts of Wellington where TelstraClear cable and CityLink fibre were already competing with Chorus' FTTN network.

The announcement of the remaining partners was also accompanied by news that whilst the partnerships with Enable, NorthPower and WEL Networks would proceed via the original 'capital recycling model', the Chorus partnership would be fundamentally different (Sadowski & Howell, 2012). Chorus, and not a separate UFB company, would own and control the infrastructure. Government funding would be provided by way of interest-free loans. In exchange, Chorus would undertake to meet specific network build and uptake targets by key milestone dates. Failure to meet these milestones would result in either or both of financial penalties and forfeiture of day-to-day operation of the firm to CFH[21]. Thus, unlike the other UFB partners, Chorus bears the most of the financial risks associated with uncertainty in the demand

[21] http://www.crownfibre.govt.nz/wp-content/uploads/2011/12/Network-Infrastructure-Project-Agreement-NIPA-24-May-2011.pdf

for fibre connections. This includes any changes in the regulatory or technological environments that render other technologies (e.g. cellular technologies, copper) more attractive to consumers than fibre relative to the assumptions prevailing when the agreement was reached.

1.4 Reframing the Regulatory Environment

The announcement that Chorus would, in fact, be one of the UFB partners necessitated a range of regulatory changes. These were implemented by way of the Telecommunications (TSO, Broadband and Other Matters) Amendment Act 2011, which received assent on June 30, 2011[22].

The basic regulatory premise of the UFB project was that the terms and conditions governing open access to the structurally separate fibre networks would be covered by contractual undertakings between CFH and the UFB partners. As structural separation was held to have dispensed with all possible concerns about a dominant, vertically integrated firm unduly favouring its own proprietary wholesale and retail operator, it does not appear to have been considered necessary to include any regulations regarding the fibre networks in the 2011 amendments to the Telecommunications Act 2011. Indeed, the terms explicitly preclude the Commission from undertaking any investigations into unbundling of the UFB networks until at least December 31 2018 (s 156AP). The Commission's sole role in relation to the fibre networks is the monitoring of information to ensure that the undertakings between the government and the UFB partners are upheld (s 156AU).

The effect of these amendments was to create two effectively independent regulatory regimes for the two different fixed line networks. Fibre would be regulated by contract, overseen by CFH and the Minister. Meanwhile copper would be regulated by statute (the Telecommunications Act) overseen by the Commission. The only possible means of the Commission taking account of any factors pertaining to the fibre markets was the loosely-worded section 18(2A) requiring the Commission to take account of "incentives to innovate that exist for, and the risks faced by, investors in new telecommunications services that involve significant capital investment and offer capabilities not available from established services" (Chorus, 2013; Hooper, 2013).

Historical precedent, however, suggests that the Commission has not interpreted "take account of" as an instruction to prioritise the relevant factor above its presumed statutory obligation to give precedence to the pursuit of competition. This is illustrated in the second mobile termination decision in 2006, when the Commission stated, in relation to its obligation to "take account of" economic efficiency in its determinations, "where there is a tension between the

[22] http://www.legislation.govt.nz/act/public/2001/0103/latest/DLM3880536.html

net public benefits and promotion of competition, the statutory context indicates that the primary consideration is the promotion of competition" (para 47). A paragraph later: "the Telecommunications Act is focused on regulating access to promote competition. It does not provide a mechanism that specifically allows for efficiency considerations to take precedence over the promotion of competition. Nor is there anything in the statutory scheme to suggest that this should be the case"[23] (Howell, 2010). The Commissioner subsequently confirmed that he had "no statutory role in promoting or protecting fibre" and that "our task in this larger project is just to fix the price of copper-based services. Retail service providers will then compete on whatever network they find most profitable."[24]

Consequently, the focus of the amendments was upon minor changes to take account of the structural separation of Chorus and the copper network from Telecom. Along with the requirements to submit various undertakings to the Minister by various dates covering the anticipated separation date and aspects of the allocation of assets and a range of social obligations previously placed upon Telecom between the two firms (Part 2, Subpart 1, ss 31 – 46), the amendment addressed the transitional provisions governing the delivery of designated services on the copper network. The most pressing regulatory issue was considered to be the pricing of the unbundled bitstream service (UBA) and unbundled loops (UBLL) supplied to commercial wholesale customers. UBA had historically been priced using Telecom's retail price minus a specified margin. The vast majority of New Zealand's broadband connections are supplied using this service, as only 128,000 out of 1.8 million lines have been 'unbundled' (Chorus, 2013, p 4). In the event of separation (also termed 'demerger' in the legislation), Chorus would have no relevant retail price from which the regulated wholesale price could be determined.

The amendments required the Commission within one year of the 'separation day' to determine prices for UBA and UBLL that would hold for the first three years following separation. During that time the Commission would be required to determine a new cost-based UBA price in the first instance using international benchmarking, but if appealed by Chorus, using TSLRIC principles (Schedule 1, Part 2). In addition, prices previously differentiated between urban and non-urban exchanges would in future be re-averaged so as to provide a single nationwide price. In order to review the efficacy of the new regulatory environment, the revisions

[23] Indeed, this decision is quite clear that, as it derived from a statutory context of the presence of dominance as defined in Part IV of the Commerce Act, the Telecommunications Act gave primacy to consumer welfare alone in its decision-making, and not total welfare. Part IV was deemed to focus upon the net benefit to acquirers – that is, it must take into account "the wealth transfer that occurs in reducing the excessive profits of the regulated party" (para 46) – an apparent acknowledgement of redistribution as the primary purpose of regulatory intervention via the Telecommunications Act, as opposed to the pursuit of increased efficiency as is the usual objective of competition law (Howell, 2010).

[24] http://computerworld.co.nz/news.nsf/news/new-wholesale-price-for-access-to-copper-network

to the Act required the Minister to review sector regulatory provisions no later than 30 September 2016 (s 157AA).

1.4 Delivering the Strategy

The first fibres for the UFB were laid in December 2010 by NorthPower[25]. By June 2012, 76,311 premises had been passed by the four partners, with 1233 users receiving services (Howell, 2012). By June 2013, 229,600 (approximately 20%) of premises had been passed[26]. The NorthPower rollout in Whangarei is expected to be complete in March 2015, some 6 months ahead of schedule. The other partners also appear to be running ahead of their build schedules. By August 8 2013, it was claimed over 300,000 premises had been passed[27]. However, fewer than 3% of premises passed have opted to connect to the new fibre services[28]. This is despite New Zealand being above the OECD average in the number of broadband connections per capita at 28.6 connections per hundred at December 2012[29], and the entry-level wholesale price of a fibre connection offering 30Mbps downstream and 10Mbps upstream being priced so as to be competitive with the 'best efforts' ADSL connection (headline speed 20Mbps downstream) provided over the copper network. At 0.2 connections per hundred population, fibre is attracting fewer consumers than the DOCSIS-3.0-enabled cable network that is available in only 2 cities (1.4 per capita – albeit that it appears to have around 60% broadband market share in those locations). Nonetheless, it is being hailed as a success as the uptake rate is higher than that achieved in Singapore and no worse than in the United Kingdom at a similar stage of deployment[30].

The separation of Telecom and Chorus duly proceeded on 30 November 2011. This was only days following the 2011 general election (November 26) that saw the National-led minority government returned with a smaller majority than in 2008. Whilst operationally successful, the separation has been less well-received by investors. The credit ratings issued for the two separate firms by all of the main rating agencies upon separation were each lower than the parent Telecom had commanded prior to separation. Thus separation per se appears to have harmed the position of investors.

Post-separation, the markets have been more optimistic about the prospects of retail arm Telecom, whose share price has not fallen below the separation day level of around $2.00, than for Chorus. After climbing to a peak of over $2.75 in August 2012, Telecom's share price has

[25] http://www.nbr.co.nz/article/ufb-rollout-starts-whangarei-134794
[26] http://www.crownfibre.govt.nz/2013/08/cfh-delighted-with-ultra-fast-broadband-progress/
[27] http://www.beehive.govt.nz/release/ufb-and-rbi-programmes-exceed-year-two-targets
[28] http://www.computerworld.co.nz/article/523298/ufb_rollout_ahead_schedule/
[29] http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm
[30] http://www.beehive.govt.nz/release/ufb-and-rbi-programmes-exceed-year-two-targets

consistently averaged around $2.30 for most of 2013. The Chorus share price, meanwhile, spent most of the firm's first year above the initial price of $3.00. However, on December 3 2012, its price plummeted from $3.34 to around $2.70 following the Commission's announcement of the draft prices for UBA to apply from December 2014. Despite a few small rallies, the price fell steadily, bottoming out at around $2.28 at the end of June 2013. The fall has been associated with a substantial sell-down by foreign investors (Chorus, 2013). The firm went from having 75% of its shares held by non-New Zealanders at separation in November 2011 to just 45% in June 2013[31] in the wake of assessments such as those of Deutsche Bank analysts, who described Chorus as an "infrastructure stock missing the characteristics investors require" in large part as a consequence of a "lack of a well-defined regulatory framework"[32]. The predominant purchasers of the stock quit by foreigners have been New Zealand managed funds, many of which are either government-owned (e.g. the Accident Compensation Corporation, Earthquake Commission and 'Cullen' superannuation funds) or manage the government-subsidised KiwiSaver individual superannuation plans. Despite small recoveries, by September 2013, the price has still not returned to the separation day price of $3.00.

1.5 Between the Separation and the Revised Bitstream Prices Falls the Shadow

The catalyst for the collapse in confidence in Chorus in December 2012 was the announcement by the Commission on December 3 that, following an international benchmarking exercise as legislated in 2011, the proposed price of wholesale bitstream (UBA) services on Chorus' copper network would fall from $44.98 per month to $32.45 per month (28%) from 1 December 2014[33]. The share price fall was likely less than it might otherwise have been, had the Commission not simultaneously announced that a revision of the draft (re-averaged) price for unbundled local loops (UCLL) from 1 December 2014 would replace the $19.75 proposed on May 4 with $23.52[34]. The May announcement had similarly been associated with a fall in Chorus's share price of around 15%, as the draft price constituted a reduction in the revenues Chorus received for its UCLL circuits falling by around 20% (the original price was $24.46). However, it did not attract the same media attention as the December announcement on UBA prices.

The December 3 announcement by the Commission led to a flurry of reaction across the entire political, industry and investor spectrum. Two significant issues attracted attention.

[31] http://www.stuff.co.nz/dominion-post/business/8848006/UFB-rollout-costs-strike-bum-note-for-Chorus
[32] http://www.3news.co.nz/Chorus-rated-a-sell-because-of-risks/tabid/421/articleID/302289/Default.aspx
[33] http://www.comcom.govt.nz/dmsdocument/9695
[34] http://www.comcom.govt.nz/regulated-industries/telecommunications/telecommunications-media-releases/detail/2012/commission-announces-small-reduction-in-wholesale-price-for-chorus-local-copper-lines

The first was that a 28% fall in the revenues Chorus received for the vast majority of broadband connections it supplied to retailers would severely compromise the financial position upon which it had based its undertakings with the government for the UFB partnership agreed in 2011. An unanticipated fall in revenues would increase the cost of capital for the UFB build, as it would inevitably be reflected in the firm's credit rating. This was not merely a theoretical threat. Moody's immediately put Chorus' 'Baa2' issuer and senior unsecured ratings on review for possible downgrades. Senior Analyst Maurice O'Connell stated that the decision, if implemented, was "inconsistent with a Baa2 profile … the potential for a final adverse outcome on Chorus' credit profile is meaningful"[35].

The second issue was that if the very large fall in wholesale UBA prices flowed through to retail prices, then the carefully-managed price relativity between entry level fibre prices and copper broadband prices upon which the (subsidised) UFB wholesale prices had been set for all four of the UFB partners so as to facilitate end user substitution from copper to fibre would be undermined. The proposed prices would make copper broadband relatively more attractive for consumers than fibre, and would inhibit the migration of users from copper to fibre connections. This would have material effects on the delivery of all four partnership agreements as negotiated. Chorus would bear the brunt of the financial risks as the owner of deployed but under-utilised fibre infrastructure, and would also be required to maintain the copper infrastructure for longer than originally anticipated, and at lower expected revenues per connection. The other UFB partners were also affected. Slower fibre uptake would retard the projected rate of capital recycling upon which the build targets of the three other providers were based. Potentially, they would be unable to meet the build targets upon which their performance is based. Ultimately, slower fibre build-out would flow through to political risk for the Minister and the National Party minority government. There was also a possibility that highly price-sensitive individuals having purchased fibre connections might opt to revert to copper, leaving the UFB partner owning the share related to that address, but receiving no income from services. This risk was more prescient the greater the share of the 28% wholesale price reduction which flowed through to retail prices.

The political risks attending the Commission's draft decision were rapidly recognised. The Prime Minister[36] immediately expressed concern that the decision "could prove problematic for the ultra-fast broadband network because consumers could be discouraged from switching from copper to fibre"[37]. He would not rule out a "law change to cut across the final commission

[35] http://www.stuff.co.nz/business/industries/8030394/Chorus-rating-to-be-reviewed
[36] Reflecting the strategic threat to a flagship policy, the Prime Minister John Key rather than the Communications Minister Amy Adams, fronted the government response.
[37] http://www.radionz.co.nz/news/political/122531/pm-not-ruling-out-legislation-over-broadband

decision if it's seen as unfavourable". The political opposition and many industry commentators reacted strongly to the possible use of legislation to override the Commission's recommendation. Such an act was seen as an unprecedented infringement on the statutory independence of the Commission. A former Commissioner opined that "the Government's response, however, is unprecedented. …. It is a fundamental principle of our telecommunications regulatory regime that the regulator is independent, and is left to carry out its statutory role without interference or undue influence from the Government. The Government, by entering into the media debate, and criticising the draft determination in such clear terms that a rating agency has concluded the issue will be resolved politically, has crossed that line" [38]. The Prime Minister did not resile from his position. A week later in Parliament, he reaffirmed the possibility of legislative action, when articulating the position that under the New Zealand regulatory arrangements, the Commission could make recommendations, but ultimately it was up to the government whether to accept or reject those recommendations[39].

The public debate rapidly developed into a confrontation between those supporting the government's ability to do whatever was necessary to ensure that the UFB network was delivered in accordance with the proposed policy and those seeing possible political intervention as the government either overstepping its powers or intervening to protect a regulated firm which should have known what the regulatory outcome would be and therefore should bear the costs.

The first position is illustrated by investor Aaron Bhatnagar, who stated "I don't recall anyone voting for the Commerce Commission to deliver New Zealand superior infrastructure. It was John Key who was mandated by the public to deliver a step-change in New Zealand's infrastructure. From a public policy perspective, it is wrong for government organisations like the Commerce Commission to be delivering changes that are hugely at odds with the government's desire to deliver on fibre, and where the government itself it spending huge sums of taxpayer money to deliver outcomes. At the very least, the commission should seek some determinations from government ministers on taking into account how its operational framework works with mandated government flagship policies."[40]

The former Commissioner articulated the latter position: "The draft price would have come as no surprise to anyone who had read the legislation and understood the industry. The existing retail-minus price was set by reference to Telecom's retail price, and bore no relationship to the costs of providing the service. It was common knowledge in the industry that a cost-based UBA price would be substantially lower than the prevailing retail–minus price…..Chorus'

[38] http://www.stuff.co.nz/business/opinion-analysis/8058701/Government-interference-doomed
[39] http://www.nbr.co.nz/opinion/key-reaffirms-govt-willing-overrule-commerce-commission-chorus-pricing
[40] http://www.nbr.co.nz/article/chorus-pricing-decision-very-problematic-says-key-bd-133405

response to the draft determination (that it could require Chorus to fundamentally rethink its business model, capital structure and approach to dividends) comes as no surprise."[41] Opposition spokesperson Clare Curran's questioning of the Prime Minister in Parliament on December 10 reflects the view that government intervention to overrule the Commission decision amounted to the government wanting "most New Zealand households to pay around $12 a month more for phone and internet services than they otherwise would", because intervention would confer profits on Chorus to which it would otherwise not be entitled[42].

A notable feature of the early stages of the debate was the absence of reference to the three non-Chorus UFB partners whose positions were also jeopardised by the decision. Apart from Aaron Bhatnagar's comment, little attention was given to the concerns of investors or taxpayers, whose $1.5 billion investment had funded the network in the first place. Neither was any explicit voice was given to the fact that the consumers receiving (or forgoing) lower copper broadband prices if the recommendation was overruled (proceeded) were in large part the taxpayers who would be forgoing (receiving) other benefits of government spending if the proposed prices proceeded (were overruled). This is especially prescient given the substantial increase in the stakes in Chorus held by government-owned funds as foreign investors sold down their holdings in the wake of the decision.

1.6 Regulatory Reassessment

The heated confrontation following the December 3 decision was further fuelled by the announcement on February 8 2013 by Communications and Information Technology Minister Amy Adams that she had "decided to bring forward the wider regulatory framework review as regulatory certainly is an important factor in the ability of New Zealanders to have early access to high-quality communication services based on new technologies"[43]. Under the 2011 changes to the Telecommunications Act, the s 157AA review was due to be undertaken no later than 30 September 2016. The aspiration was that the review would bring about increased certainty in the regulatory arrangements in order to enable ta smooth and timely transition from copper to fibre products.

Investors responded positively to the news of the review, and Chorus's share price immediately rose 9% – albeit that this still left it 7% below the December 2 price. However, it did not reassure critics of government intervention. Opposition spokesperson Clare Curran claimed that this amounted to "Amy Adams taking almost $400 right out of the pockets of Kiwi

[41] http://www.stuff.co.nz/business/opinion-analysis/8058701/Government-interference-doomed
[42] http://www.nbr.co.nz/opinion/key-reaffirms-govt-willing-overrule-commerce-commission-chorus-pricing
[43] http://www.beehive.govt.nz/release/review-provide-certainty-consumers-industry

households with her delaying tactics on the Commerce Commission's suggested price cuts"[44]. That the proposed prices were not to come into effect until December 2014 seems to have been overlooked by commentators supporting this argument. Telecommunications Users Association CEO Paul Brislen accused the minister of increasing, and not reducing, uncertainty by subjecting the industry to another lengthy review: "Extending the UBA review means we have a half-house regulatory regime in place until after this new review has been completed….The government has chosen in effect to freeze that process and to leave the industry in limbo"[45]. Proponents of this argument do not appear to have recognized that the separation of regulatory responsibilities for fibre and copper between the CFH agreements and the Commission meant that a 'half-house regulatory regime' had been governing the industry since 2010, and that this was in fact the origin of destabilizing uncertainty that played out with the Commission decision.

Although the proposed review was announced on February 8 2013, it took until August 7 for the Ministry to release the relevant discussion document. In the interim, uncertainty continued. Many views were expressed in this period about the best way forward for the regulatory review. These ranged from a full revision of the basic principles of the New Zealand regulatory regime (Howell, 2013) to ratification of the Commission's prices (Brislen, 2013)[46]. A common theme expressed by retailers was that the level of the price for UBA was less important than having certainty about what the price would be in the future, so as to enable the retailers to set prices for both their copper and fibre services. The delay in price certainty was blamed in part for the absence of enthusiasm amongst the major retailers to design plans and commence marketing the fibre network (although other equally plausible explanations exist for this delay). What was clear was that it was across this long period of uncertainty that the Chorus share price fell to its low point as foreign investors sold down their holdings.

When it was finally released on August 7, the MBIE discussion document[47] bore little resemblance to a classic sector-wide regulatory review. It proposed a staged approach beginning first with an examination of "whether the current regulatory framework is fit-for-purpose for the transition from the legacy copper to the new fibre network" (p 11), with any further considerations of the regulatory settings being deferred until 2020. Although asking if the settings were fit-for-purpose in the transition, the document is notable for its absence of analysis of the effectiveness of the underlying regulatory principles and instruments employed, or empirical evidence. Instead, it dealt only with the need to set copper prices in a manner that

[44] http://www.labour.org.nz/news/adams%E2%80%99-dodgy-deals-cost-kiwis-400
[45] http://tuanz.org.nz/blog/2013/2/8/the-industry-left-in-limbo
[46] http://www.nbr.co.nz/article/chorus-needs-do-job-it-was-paid-not-push-copper-tax-ck-145739
[47] http://www.med.govt.nz/sectors-industries/technology-communication/pdf-docs-library/communications/review-of-the-telecommunications-act-2001/Review-Telco-Act-2001-discussion-document.pdf

supported the timely rollout of fibre and replacement of the copper network, provides "no financial disincentive to provide fibre-based services and for consumers to choose them" and that "minimises the time period when two parallel networks (copper and fibre) need to be operated and maintained, which is inefficient" (p 15). Historic use of LRIC pricing as mandated in the Act was deemed to be quite suitable if it was assumed that the costs of building a modern equivalent network to the copper infrastructure (i.e. a fibre network) was 'discovered' during the 2011 tendering process. This was reflected in the prices agreed between CFH and the UFB partners (p 15-16). Thus, the wholesale fibre prices would become the benchmark from which copper prices would be set within a range of $37.50 and $42.50. The only remaining question would be who would set the copper prices and what methodology would be employed. Three options were offered:

1. The Commerce Commission would set the total copper price between $37.50 and $42.50; the UBA price would be set by benchmarking and the UCLL (unbundled copper loop price) would be the difference between the two;
2. The Government would set the total copper and UBA prices; the UCLL price would be set at the current level and the UBA price set at the total price less UCLL price;
3. The government would set the total copper price; the UBA price would be set by benchmarking and locked in at that price; the UCLL price would be the difference between the total and UBA prices.

The balance of issues was seen to pertain to the state of the regulation post 2020. Although views were sought on matters such as content and backhaul markets, merits reviews of decisions and whether and how to test for sufficient competition to allow relaxation of regulatory oversight of 'ladder of investment' elements, these issues were seen to be secondary to the problem of setting the copper prices (p 19).

1.7 The Response

Response to the document was extremely varied.

A lobby group the Coalition for Fair Internet Pricing comprised of Consumer New Zealand, InternetNZ, the Telecommunications Users Association of New Zealand, retailers Orcon and CallPlus, the Federation of Maori Authorities, New Zealand Union of Students' Associations and Grey Power was formed and launched a media campaign labelled "Axe the Copper Tax". The group argues that the government's failure to uphold the Commerce Commission's proposed prices amounts to "a new tax of $600 million on Kiwi broadband customers to unfairly boost the

profits of Chorus, a private monopoly that last year made a profit of $171 million" and is "welfare for corporates"[48]. This group appears to be quite oblivious of the extent of exposure that the government and taxpayers bear by way of loans to and shareholding in fibre firms. Their view is that the MBIE document does not establish either that the proposed prices would lead to a material delay in the broadband rollout or that the lower prices will have a material effect on Chorus' financial viability. The group is pursuing legal options for challenging the government, and has requested the Australian Stock Exchange (on which Chorus is listed) and the Australian Securities and Investments Commission to investigate the company in light of claims made by the Prime Minister that Chorus's financial viability would be threatened if the Commission's prices prevailed[49].

The Coalition appeared to get support from Vodafone, the second-largest retailer and owner of the rival cable network and one of the most aggressive unbundling competitors (Vodafone has a market share of around 30%). Vodafone submitted that the government's proposals mean "taking money from New Zealand consumers and paying it to Chorus shareholders. This intervention is quite simply a stealth copper tax on consumers with no justification". It was also contended that "there is no evidence to suggest that the UFB objectives are at risk". The government intervention is described as a "whim to deliver unnecessary corporate welfare to Chorus at the expense of all consumers who will pay more for telecommunications services"[50]. However, Vodafone stopped short of joining the Coalition.

By contrast, Telecom (with around 50% broadband market share) has supported the government setting the copper prices. Whilst favouring a price at the lower end of the proposed spectrum, CEO Simon Moutter affirms that "ongoing debates about copper pricing risk distracting our industry, and customers, from the far more important questions of how, as a country, we can best take advantage of the very valuable fibre assets we are investing in. ….Above all else, our industry needs input pricing certainty."[51].

Chorus also concurred with Telecom that the government should set prices. In a submission on the MBIE discussion document it states that "the framework is broken: the government is right to intervene. … what has played out since demerger in 2011 is not what was intended. Section 18(2A) was intended to be a 'signpost' to support investment in, and migration to, fibre. But there have been a number of wrong turns. Capital markets are viewing New

[48] http://www.stuff.co.nz/business/industries/9155840/Chorus-big-winner-in-internet-reform-Coalition
[49] http://www.stuff.co.nz/business/industries/9180646/Axe-the-Tax-group-complains-to-Aus
[50] http://www.nbr.co.nz/article/vodafone-slams-corporate-welfare-chorus-copper-tax-ck-p-145972
[51] http://www.nbr.co.nz/article/telecom-backs-setting-copper-prices-until-2020-warns-against-getting-too-far-away-input-cost

Zealand as 'too hard' – the significant and unexpected regulatory price shocks have led to a flight of international capital from Chorus" (Chorus, 2013: 1).

1.8 An Industry in Disarray

In September 2013, the New Zealand telecommunications industry appears to be in a state of near complete disarray. The apparently well-intentioned government policy of 2008 to accelerate the deployment of a nationwide FTTH network by subsidising public-private partnerships is now threatened by disagreements regarding the regulation of the copper network. However, unlike past disagreements, this is not a clear case of access seekers disagreeing with the network owner about terms. There is a clear division amongst retail providers about the appropriate strategy for moving forward.

The major difference between the current situation and past industry impasses is that the government is now a major new investor in the sector. It is no longer simply legislator and overseer of regulatory functions. Whereas past regulatory disputes in New Zealand have typically been resolved by the disaffected parties appealing for and achieving political intervention (for example, mobile termination, local loop unbundling, functional separation and the undertakings to build the FTTN network – Howell, 2010), the government is now an industry participant and hence an 'interested party'. For this reason, it appears unlikely that the current impasse can be satisfactorily resolved using recent past precedents. Whilst the government could use legislation to change the rules, the highly political ramifications mean that a subsequent government could just as easily use legislation to overturn them and establish different rules. This does nothing to engender longer-term stability for the sector. In principle the courts offer a neutral venue by which some aspects of the dispute can be heard. This course of action appears quite possible (e.g. action brought by the Coalition) if the government proceeds with any of the proposals outlined in the MBIE discussion document. But once again, such action will perpetuate, rather than resolve, the uncertainty.

There are uncanny parallels between the pursuit of judicial options and the protracted court cases between 1991 and 1994 following the implementation of the 'light-handed regulatory' regime. Ironically, the costs of court action, the inability to address issues other than the legal point in question and the long periods of uncertainty whilst awaiting court decisions were reasons proposed in support of the move away from court-mediated competition law towards industry-specific regulation in the period leading up to the implementation of the Telecommunications Act 2001 (Howell, 2007; 2010). But in the absence of any other guiding precedents, and the

unwillingness (and in 2013 the inability) of the government to intervene in an industry dispute, the courts provide a last, if imperfect, resort.

2. The Policy and Regulatory 'Problems'

> *"The last temptation is the greatest treason:*
> *To do the right deed for the wrong reason."*
>
> Thomas Becket, Part One,
> Murder in the Cathedral, T S Eliot (1935).

It is apposite at this point to examine the nature of the institutions governing interactions within the New Zealand telecommunications industry that have led to the current disarray. Such an examination will be instructive for other countries looking at the options for government to take a more active role in fibre network funding. As the New Zealand industry had adopted many of the orthodox tools employed in other jurisdictions, there are likely many similarities and therefore the potential for similar impasses to emerge.

2.1 Backward-Looking?

The recent history of aggressive re-regulation of the New Zealand telecommunications industry has been characterised by the promotion of short-term services-based competition on existing infrastructures. In this paradigm, one of the principal regulatory responsibilities is the setting of cost-based prices for services sold by the incumbent to competitors. The assumption is that such prices prevent the incumbent monopolist from extracting excessive profits and, in some circumstances (via the 'ladder of investment'), can incentivise service-based competitors to invest incrementally to become to full infrastructure competitors. However, low prices and mandatory access to competitors militate against the incentives for the incumbent to invest in upgrades and new networks. It is this tension that appears to sit at the core of the current New Zealand impasse.

On the one hand, this tension appears little different to that faced by almost all OECD governments. After two decades of pursuit of services-based competition based on open access and local loop unbundling, most are now considering how to transition from a single focus on pursuit of increased competition on copper networks towards a more nuanced position that acknowledges the necessity of incentives for investment in upgraded and replacement networks by both the incumbent and its competitors (Cave, 2013; Patterson, 2013; Bourreau, Dogan & Manant, 2010). On the other hand, the New Zealand regulatory environment is very different to that in most other OECD countries for two reasons. The first is the very short time that access regulation has been in place. The second is that the government, and not the industry, is setting the strategy, timing and terms of fibre investment. Rather than the transition to fibre being the

outcome of an evolutionary process governed by the commercial interaction of consumers, network operators and retailers (albeit using products governed at some point by regulatory prices and terms), it is occurring as the consequence of a government-initiated 'revolution'. The question of how to set the price of access to the legacy technology in order to incentivise investment in the frontier, which is a feature of the current European regulatory debate (e.g. WIK, 2011; Bourreau, Cambini & Hoernig 2012), has been bypassed in New Zealand because the fibre network investment has already been secured.

Typically, revolutions fundamentally disrupt existing governance arrangements. The return of government as the strategic initiator and principal new investor in the telecommunications sector is equally as revolutionary as was its retreat during privatisation over twenty years ago. This suggests a need to fundamentally rethink the shape and scope of the regulatory arrangements to cope with a fundamentally different industry reality. Governments hold powers not available to other market participants. They also have very different strategic objectives so cannot be expected to respond in the same manner as commercial investors in a given set of circumstances (Cambini & Spiegel, 2011). Other market participants will also respond differently when governments participate as investors in regulated firms (Bortolotti, Cambini , Rondi & Spiegel 2011). This indicates a need for a revolutionary redesign of sector governance arrangements. This has been the case in Australia, where competition principles have been swept aside to allow for government buy-out of fixed line competitors and the managed substitution of copper subscribers onto fibre networks in order to deliver the government's fibre network agenda (Howell, 2012)[52].

Yet the fundamental tenets of New Zealand regulatory arrangements to support the roll-out and transition to fibre remained unchanged from those governing the implementation of local loop unbundling and functional separation in 2006. The solitary change has been to further increase the regulatory intensity of access regulation on the copper network (i.e. mandating full structural separation). Arguably, this would be the next step in the pattern of more intensive regulation of a copper network if the fibre investment was neither necessary nor imminent (Howell, 2010b). But the government investment has made infrastructure (facilities) competition a reality. Structural separation of the legacy network is fundamentally inconsistent with competitive neutrality under facilities competition as all else held equal it imposes higher costs on the separated firm than its integrated competitors (de Bijl, 2005) and encourages inefficient over-investment in competing networks at the margin (Howell, Meade & O'Connor, 2010). Structural

[52] Albeit that the current Australian arrangements have been cast in uncertainty following the defeat of the Labor government in the September 7 2013 election.

separation of the frontier firm also exposes it to the consequences of strategic gaming of the regulator by access seekers, who are rewarded with lower regulated prices by systematically inflating their estimates of expected future demand for connections to the new network (Heatley & Howell, 2010).

That there has been no substantive change in the fundamentals of the New Zealand regulatory arrangements despite the revolution in sector funding, and that those changes that have been undertaken have been to intensify the rigor of the existing regime, suggests a backward-looking rather than forward-looking approach to regulatory policy. Rather than focusing on a forward-looking set of arrangements predicated on a vision of how the industry would evolve into the future, including the period over which the substitution of fibre for copper would occur, policy has been backward-looking, seeking to further constrain the incumbent firm's market power in the legacy technology. Indeed, structural separation was one of the options considered but rejected in the 1987 reforms prior to privatisation, and has never been 'off the table' (in the views of competitors to the incumbent at least) in any of the subsequent ministerially-initiated sector reviews in 1996, 2000 and 2006 (Howell, 2010b).

It appears that the government's 'grand strategy' for a fibre network was implemented as if it was a stand-alone project independent of any need to co-ordinate the integration of either the network or the requisite regulatory framework governing it into the existing industry. Meanwhile, the custodians of the regulatory framework governing the pre-fibre industry appear to have failed to appreciate the revolutionary effect of the government's strategy on their sector. Past activities had likely led policy makers to focus upon constraining a dominant firm rather than creating the conditions for the evolution of the industry. Whereas historically the dominant firm had promulgated its view of the optimal path forward for the industry, once it became clear that the government and not it would determine the technological future of the industry[53], it no longer had any incentive to act as custodian of or advocate for an overarching sector strategy. The result was a gap in the governance of the industry. The subsequent 'leaderless revolution' allowed the fibre and copper networks to travel independently in different regulatory directions, apparently oblivious of the need for a consistent, co-ordinated and sustainable set of regulatory arrangements to govern the transition from a copper-dominated world to a fibre-dominated one. It was inevitable (and predictable – Heatley & Howell, 2010; Howell, 2012) that a crisis would emerge

[53] This appears to have begun around the end of 2007 following the 'investment standoff' that culminated in the undertakings between Telecom and Chorus to build the FTTN network. The appointment of a new CEO who took office on 27 September 2007 led to a very different strategy where the firm appeared to take a much more conciliatory approach to its relationship with the government rather than openly contesting endeavours to increase regulatory intensity, as had occurred in the preceding period of re-regulation.

at some point when activities in one network's sphere of influence would materially impinge upon the objectives of the other.

2.2 A 'Leaderless Revolution'?

The chronology in Section One supports the contention that the relevant political and policy-making entities bringing about the fibre implementation failed to appreciate the extent to which the path embarked upon was truly revolutionary for the New Zealand telecommunications industry. The government-subsidised network could not be treated in the same manner as the small number of fully privately-funded fibre networks that had emerged in some urban areas in response to specific (predominantly commercial) demands, and be left largely to its own devices. Yet that is what did occur, resulting in a 'leaderless fibre revolution'.

The political proponents of the UFB appear to have believed that it was simply a case of 'building it and the appropriate regulatory arrangements would come'[54]. This would account for the fact that no explicit consideration appears to have been given to the very different competitive environment that government investment was engendering. Unlike in Australia, the political proponents gave no explicit voice to their competitive objectives in funding the network. Despite the objective specified for CFH to accelerate the rollout of fibre, it was not clear whether the New Zealand politicians were funding the network in order to provide infrastructure competition to the copper network (as would have occurred had the recently-imposed ladder of investment provisions succeeded in their objectives) or to accelerate the rate at which the (natural monopoly) FTTH network would replace the (natural monopoly) copper network. No empirical economic analysis of any kind[55] (e.g. a cost-benefit analysis) – let alone any market analysis - was undertaken prior to the rollout proceeding. The sole 'signal' given was the inclusion of the 'signpost' to the Commission in s 18(2AA) of the revised Act to take account of investment incentives in making its determinations. However, the amendments did not receive asset until June 2011, ***after*** CFH had agreed terms with all of the UFB partners in May 2011. Furthermore, the Act directed the Commission in relation to copper pricing alone. Consequently it had no influence on CFH's actions, nor could CFH influence the Commission's.

[54] Or as the author has postulated elsewhere a case of 'policy envy' with Australia – that is, 'we'll have what Australia's having" – even though the fundamental industry circumstances in the two countries were very different.

[55] The New Zealand Institute study that is thought to have precipitated the policy did not meet the criteria required for a robust economic analysis. Kenny & Kenny (2011) identify a series of 'traps' into which many studies assessing the benefits of fast broadband tend to fall. The New Zealand Institute report falls into most of them. For example, it assumed that the fibre network would be implemented in an environment where there was no pre-existing internet access of any kind. It thus attributed all benefits of internet access already present in the New Zealand economy to the yet-to-be-built fibre network. It also applied highly questionable data to assess the returns to fibre investment, and used examples of applications enabled by the network that are that are already possible using standard broadband connections.

2.2.1 Build a Network – Cheaply

Invoking Occam's Razor[56], the simplest explanation for the observed events appears to be CFH was given no competition-based directives, and was simply directed to procure the cheapest network. This is consistent with both the fractured process and the ultimate allocation.

The brief to CFH appears[57] to have been simply to get the fibre network built – at as low a cost as possible to the government subject to the politically-imposed timing and uptake targets[58]. The only regulatory imposition was that the networks be structurally separate. CFH appears also to have been given no instructions to take account of the effect of the partner identities and terms under which the UFB partnerships were struck would have on competition or investment incentives in the wider broadband market (either mobile or fixed, including cable and fibre networks such as such as CityLink in Wellington, deployed in 1995 – Howell, 2010a).

Evidence that the CFH processes were undertaken within a 'silo' largely disconnected from any cohesive competition policy and the activities of the rest of the industry is provided by the clumsy manner in which the tender terms were altered after the process had closed. It is also evidenced in the puzzling and inconsistent allocation of the contracts. CFH chose to partner with the incumbent in the largest and most densely populated region of the country (Auckland). This immediately foreclosed future copper/fibre infrastructure competition in the area where it was most likely to be economically sustainable (especially in light of subsequent development of vectoring technology to provide fast access on copper in densely populated regions). Meanwhile, by letting the Whangarei contract and a bundle of central North Island contracts to competitors to the incumbent, it guaranteed that prolonged copper/fibre infrastructure competition would be inevitable in several small provincial towns where it was almost certain that there was not a sound economic case for long-run network duplication[59]. This pattern of contract-letting led to further confusion about the overarching competition intentions behind the fibre investment. Whilst the initial contracts let to competitors suggested an infrastructure competition motive, the subsequent Chorus contract appeared to contradict this. Yet the Enable and WEL contracts suggesting an infrastructure competition imperative were announced at the same time as the Chorus contract.

In order to induce Chorus (which had an undisputed cost advantage over its rivals due to the FTTN network) to 'sharpen its price', CFH had to send a credible signal that it was prepared to allow Chorus's FTTN assets to become stranded. This was achieved by CFH pre-empting the

[56] http://en.wikipedia.org/wiki/Occam's_razor
[57] Commercial sensitivity and the reliance upon private contracting means that CFH's activities are far from transparent.
[58] Personal communication with a member of the CFH negotiating team confirmed that a principal objective of the tendering and negotiation process was "getting Chorus to sharpen its pencil" – that is, tender as low a price as possible.
[59] That these towns had limited infrastructure competition potential is illustrated by the fact that they were never likely to be subject to unbundling under the 2006 regime.

tender process by 'going early' and letting a significant share of the contract to a non-Chorus partner. But in order to ensure that Chorus did not walk away from the project entirely, leading to a higher total cost of the project overall[60], CFH was left with no option other than to award the very large Auckland area (around 50% of the project) to Chorus. Thus, the Northpower contract was let in September 2010, whilst CFH continued to negotiate with Chorus until May 2011[61] (Howell, 2012). An alternative explanation that has been offered is that for political reasons, it was untenable to offer Chorus the whole contract, due to the popular disregard for Chorus and its processor Telecom. This may be true, but this does not explain the two-stage contract letting process. Furthermore, if the economic imperatives prevailed, then it might have been more appropriate to let contracts to non-Chorus parties in contiguous areas (e.g. the South Island), to obtain benefits from shared infrastructure such as backhaul. That this did not occur tends to support the former rather than the latter as the most credible explanation.

2.2.2 …And Separately

That such a state of affairs could develop suggests an abrogation of duties by the officials responsible for the sector's competition and regulation policy. It is astounding that the review of the Telecommunications Act was planned to take place after the CFH partners had been decided. It is equally astounding that the discussion paper, when eventually released, was of the view that the changes to the Telecommunications Act were independent of the identity of the successful UFB tenderers. And it is even more astounding that the entire focus of the changes was backward-looking, intensifying regulation of the legacy infrastructure. Its sole purpose appears to be simply to give legislative effect to the tendering pre-condition that successful partners must not be co-owned with retail operations.

This situation was made more likely to arise because there has never been a detailed economic case provided by officials of the effects of either functional or structural separation of either the copper or fibre networks (Howell, 2009). Functional separation was provided for in the 2006 revisions of the Act as a 'last resort' to be invoked if local loop unbundling failed to deliver

[60] It has been suggested that Chorus' position following the NorthPower announcement was that that if it did not get the Auckland contract, it would withdraw its participation in the project. In August 2010, it sought a national contract http://www.computerworld.co.nz/article/489125/telecom_holds_national_solution_govt_fibre_network/. There was considerable political sensitivity regarding subsequent negotiations between the firm and the Minister about the balance of the contracts. http://www.computerworld.co.nz/article/489423/joyce_fighting_keep_telecom_letter_off_record/

[61] This does not account for the Christchurch contract being let to a competitor. This ensured that the city would have protracted infrastructure competition between copper, cable and fibre. It is even more astounding that this strategy was adopted following the two devastating Christchurch earthquakes, as it led to the inevitable reconstruction of the full copper and cable networks at the same time and in isolation from the fibre network being deployed by yet another party. Despite the opportunity to use the rebuild as a means to accelerate the replacement of the copper network, there appears to be no cohesive fibre strategy being employed (e.g. no planning requirement that rebuilt houses be cabled for fibre). New copper connections continue to be laid to rebuilt houses and attempts by residents who would like to deploy fibre have met with little official or retailer support (personal communications with affected Christchurch residents).

the desired increase in competitive intensity. No explicit consideration was given to how it would affect incentives for future fibre investment. The sole focus was on the copper network. It was not separately addressed in the Regulatory Impact Analysis accompanying the legislation. Yet its provisions were invoked by the Minister in April 2007, long before the first unbundled circuits were sold. In the end, 'functional separation day' and the sale of the first unbundled circuits were only two weeks apart (Howell, 2009). If due consideration had been given to the effects of separation on future network investment incentives, then the ensuing disjunction between investment, competition and regulatory policies might have been revealed and/or avoided. Importantly, it would have led to a clear forward-looking view of the evolution of the industry and the regulatory environment that would best support it. At the very least, it should have led to a clear view of who would be the owners of the new networks under the proposed regulatory arrangements and how to best incentivise that investment – that is, a co-ordinated regulatory policy spanning the transition between two networks.

It is now plain that the 2006 'ladder of investment' prioritising copper network investment by competitors over incumbent interests was destroyed by the UFB structural separation mandates for structurally separate fibre operators. The copper ladder ends up going nowhere, at least in the areas where government-subsidised fibre will be laid. Regardless of whether the government's intention for funding the network was to promote infrastructure competition or rapid substitution across natural monopoly infrastructures, the pursuit more intensive regulation and in particular ladder-of-investment based instruments across the entire copper network appear futile. If the desired infrastructure competition has been achieved with the fibre deployment, then *de*regulation appears to be the appropriate forward-looking regulatory action for the copper network. If the objective is rapid substitution between networks, then the pursuit of competition on the copper network is no longer the overriding regulatory consideration (Heatley & Howell, 2010; Patterson, 2013). The forward-looking approach would be to plan for a rapid, but managed transition between the networks so as to minimise the inefficiencies arising from having duplicate networks operating alongside one another. Yet there was no discussion of these very fundamental issues in any of the MED discussion documents.

The regulatory approach taken between the announcement of the UFB policy in 2008 and the revised regulations legislated in 2011 and arguably even those proposed in 2013 supports the view that the officials considered that they had responsibility only for regulating activities on the copper network, whilst CFH was responsible for regulating the fibre networks. What appears to have been overlooked is that someone needed to take responsibility for the overall direction and governance of the activities occurring in the ***broadband market*** – across all technologies and in

all separate relevant sub-markets. What is most astounding of all is that despite all of the changes to the regulatory arrangements in New Zealand across the 2000s – most of which have purported to be placing the development and uptake of broadband infrastructures as a key objective[62] - there appears to have been no explicit mechanism by which the development of the technology-agnostic broadband market was given precedence over either technology-specific or firm-specific objectives.

2.3 Path Dependency

Given the tenor of the current European policy debate, it appears extraordinary that this situation could have arisen in New Zealand, especially given that most of the inspiration for the reforms over the 2000s relied upon European evidence. A plausible explanation is that New Zealand's re-regulatory thrust has been predicated upon very different origins from the regulatory paths followed in most other jurisdictions. Whilst the instruments imposed in New Zealand (access regulation, ladder of investment, separation etc.) are the same as in many other countries, the legislative framework in which they have been implemented and the motivations for their implementation have been very different. This leads to the conclusion that the processes under which regulatory instruments are imposed are as important as, and perhaps even more important than, the instruments themselves. Unless these nuances are understood, the risk exists that situations such as the impasse currently prevailing in New Zealand may arise.

New Zealand's Telecommunications Act 2001 is unusual in the OECD context. Unlike the European Union framework, which is predicated upon the definition of relevant markets, the need to determine a substantial lessening of competition in those markets to support the imposition of remedies, the granting of a considerable degree of discretion to regulators in the choice of remedies adopted, and the applicability of the provisions to any party exhibiting the requisite market power, the New Zealand Act is highly prescriptive and specific. It names the specific firm that is the target of its provisions (Chorus, but formerly Telecom). It identifies the specific products and services supplied by Chorus that are the subject of regulation. All are provided on the cooper network. The precise methodologies used to calculate the prices at which these products and services are to be sold are specified (in the case of the hotly-contested UBA prices that stimulated the current impasse, these are in the first instance, benchmarking, and in the event that those prices are challenged, TSLRIC).

Ironically, the regulatory legislation in the country which led the world in the application of competition law governance of telecommunications markets eschews competition law

[62] Hausman & Sidak (2005) note that New Zealand was unusual in being one of the few jurisdictions to be implementing regulation specifically with the objective of increasing broadband uptake per capita.

principles in favour of explicit prescription. Meanwhile, the framework in the EU jurisdictions commonly identified as being one of the most prescriptive is predicated upon the principles employed in competition law. The reason for this stark difference appears to be the different origins of industry-specific regulation in each.

In the EU, dual processes of market liberalisation and privatisation were carried out with a pre-determined view that whilst there would be limited competition for the fixed line operator in the short term, if the policies were successful, in the long term competition would gradually emerge. The regulatory regime had to be robust to those changes. Consequently, the regulatory tools were constructed with a forward-looking view of an industry whose structure would inevitably change over time, and that both deregulation and new firms emerging and taking a dominant position in some markets were not simply possibilities, but the fundamental rationale underpinning the regime. The issue of the need for technological neutrality has also been ever-present in the shaping of the EU framework, at least since the emergence of broadband from the late 1990s. This is not to say that the regime has been ideal – there are many examples of problems. But rather it is to illustrate a consistency between the forward-looking view of market evolution and the regulatory instruments employed for the delivery of that vision.

By contrast, the New Zealand regulatory framework has emerged and evolved as a consequence of a consistently backward-looking approach. Its initial motivation did not derive from a cohesive and principled vision of how the sector might evolve in the future, but from an explicit desire to constrain powers exerted or purported to have been exerted in the past by the incumbent firm. The 2001 Act had its origins in a prevailing view that the 'light-handed experiment' of Competition Law governance had 'failed'[63] because the incumbent firm Telecom was held to still be charging prices based upon the controversial ECPR formula that were higher than that might be revealed under other cost-based pricing riles such as LRIC (Fletcher, 2000). Concerns were also held that Telecom was abusing its dominant position to foreclose competition by changes made to the handling of dial-up internet traffic (Karel, 2003).

The presumption in 2001 when the Act was first cast was that the provisions within Part IV of the Commerce Act 1986 had proved inadequate for dealing with Telecom's dominance, and that industry-specific regulation was necessary. The starting position was a perceived need to constrain a single, extant firm with a dominant position[64]. The specific and prescient problem

[63] Empirical evidence of its performance is much more nuanced than this (Howell, 2007).

[64] The path-dependent development of New Zealand's telecommunications regulations also helps explain some other curious decisions. In 2006, in its second determination on mobile termination rates, the Commission explicitly rejected that prioritisation should be given to the pursuit of efficiency as an objective of the Telecommunications Act, despite the explicit instruction that decisions 'take account' of it. The Commission ruled that as Telecommunications Act was deemed to have been derived as a consequence of the existence of Commerce Act Part IV-type dominance, any the

that had arisen in the 1991-4 court cases was the legitimacy of the pricing rules used in setting its prices to competitors. It was never an explicit role of that first Act to oversee the transition towards infrastructure competition because it was already present to begin with. Indeed, the 1991-94 court proceedings would never have occurred if there had not been a second fixed line network competing with the incumbent and seeking to interconnect with it (Howell, 2007).

The ensuing regulation explicitly and directly addressed the issue of Telecom/Chorus's dominance alone. The first Commission was perceived to be principally an arbitration body facilitating contractual processes involving the dominant firm, albeit with the aid of specific legislated pricing tools. Its initial narrow scope confined to only a limited number of voice telephony products and excluding nascent internet-related products and services was so that its provisions would not impede the development of infrastructure competition in that market[65]. The legislative framework began by identifying the firm, specifying the relevant (wholesale) products of interest and identifying the exact pricing methodologies to be used in striking regulated prices. The powers of the Commission were highly circumscribed within these bounds. Contribution by the Commission to industry policy was confined to the ability to instigate inquiries and make recommendations to the Minister. Subsequent amendments increasing regulatory intensity built upon this initial firm- and network-specific framework. When regulation extended to new products and services (e.g. bitstream unbundling, backhaul, local loop unbundling etc.) they and their pricing methodologies were similarly 'hard coded' into the legislative infrastructure. Interconnection and mobile termination are the only services where the Act had the power to bind any parties other than Telecom/Chorus.

The form of the legislation has thus shaped the successive thinking about regulatory issues. The tightly prescriptive legislative focus on Telecom/Chorus, its (copper) networks and wholesale products supplied to commercial competitors has precluded a broader, technology-agnostic and market-based view of the industry being taken at a policy level, even though from time to time, the Commission has applied a market-focused approach (e.g. backhaul). The political imperative for legislative change was always upon making Telecom/Chorus 'more

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tension between the promotion of competition (the means) and the pursuit of efficiency(the end), would be resolved by primacy being given to competition: "where there is a tension between the net public benefits and promotion of competition, the statutory context indicates that the primary consideration is the promotion of competition" (para 47). A paragraph later: "the Telecommunications Act is focused on regulating access to promote competition. It does not provide a mechanism that specifically allows for efficiency considerations to take precedence over the promotion of competition. Nor is there anything in the statutory scheme to suggest that this should be the case". In relation to regulation of Telecom/Chorus' copper network, this has come to mean the promotion of competition on the copper network, above all other considerations.

[65]A notable feature of the 2000 Inquiry was that the owner of the cable network, TelstraClear, which was at the time expanding aggressively, submitted strongly against the possibility of internet services being subject to regulation (Howell, 2007). .

competitive' by further constraining its powers, rather than upon wider market considerations. The Ministry, and not the Commission, determined the policy agenda. Over time, the form of the legislation has come to shape the Commission's activities as well as policy thinking. Whilst initially the Commission explicitly took an industry-wide and dynamic view informing sector policy in its mandatory and self-initiated inquiries (notably the 2003 rejection of local loop unbundling), following the 2006 MED-led 'industry stocktake', and the Minister's decision in 2007 to personally oversee functional separation, its effect on sector policy became increasingly marginalised and focused on current issues of dominance rather than future sector policy. The shift in Commission focus co-incided with the increasing politicisation of the regulatory processes (Howell, 2010), which left Ministry policy officials with even less ability to influence sector direction than previously (albeit that they had overseen the implementation of the prescriptive regulations, so likely saw their policy contribution similarly as constraining present market powers rather than shaping future sector direction).

It now becomes easier to understand how the policy leadership vacuum could have emerged in the wake of the political decision to implement the FTTH network. With a 'legislative and regulatory culture' predicated upon constraining a single dominant firm and not the design of an institutional framework to govern the evolution of a market, it is possible to conceive that it was assumed that specific firms, and not the markets in which they operate, are the subject of regulatory activity. To the extent that a 'market' is relevant, in the New Zealand fixed-line regulatory experience, given that the products of interest are network-specific and sold on wholesale and not retail markets, it is the network that determines its scope. This view would explain why policy officials might support UFB operators being governed by new, firm-specific regulations (either legislated or by contract) separate from and independent of regulations governing Chorus' copper network. To the extent that Chorus was a fibre network partner, then under these assumptions its fibre network could be considered and regulated separately from its copper network. If regulation of the copper network was independent of regulation of the fibre network, then there was no need to take any explicit steps to integrate the changes to the copper regulatory arrangements with any specific activities undertaken by CFH and the fibre contracts. The two separate regulatory activities could be delegated to two separate institutional 'silos' without there being any explicit need for the 'silos' to engage with or take account of each other's activities.

In this context, structural separation of Telecom and Chorus in 2011 could be seen as simply a technical matter of adjusting the copper network settings to enable regulation of the copper network to continue along its existing trajectory. The only practical effect was to find a

new way of setting prices previously determined using retail-minus methods. There was no apparent need to change any of the Commission's powers. It was 'business as usual' on the copper network.

Whilst this explanation does not excuse the omissions, it does provide an explanation as to why the subsequent events in 2012 and 2013 were allowed to develop.

2.4 Errors of Commission: the Role of Regulatory Takings

Whilst the government-funded FTTH network may have been good politics, it is now evident in that it was not sound policy for CFH to proceed with letting contracts prior to the basic tenets of competition and regulation policy governing the industry going forward being decided. Had a clear policy been identified prior to the establishment of CFH, it would likely have led to a very different tendering process – if indeed there should have been a tendering process at all. It would certainly have ensured that CFH was required to take explicit account in its decisions of the dynamics of the copper market, its' recent past history and future evolution in the face of the inevitable transition from copper to fibre. It may even have led to a reconsideration of the two different dimensions of 'separation' – vertical separation of retail and network activities, and horizontal separation, where different networks have different owners – in the shaping of the New Zealand industry. This can be illustrated by returning to consideration of the two different types of competition. It also leads directly to the identification that was only (belatedly) recognised by CFH, and not apparently at all by policy-makers and the Commission – that legacy copper investment (both network and unbundling) affected incentives, bidding strategies and even the role played by the price finally agreed in calibrating the operation of the market in the transition from cooper to fibre.

If the FTTH policy was intended to promote infrastructure competition, then it would seem to rule out the incumbent from being eligible for fibre subsidies as long as it remained the owner of the copper network. In this case, the relevant regulatory policy question to be addressed was not one of structural separation of the incumbent's retail and network operations nationwide, but separation of the ownership of the copper and fibre networks in each of the thirty three geographic locations upon which the fibre tenders were based. This would have been consistent with the historic use of 'ladder of investment' policies as it would have encouraged existing market participants to enter into the bidding. It would have precipitated other issues – not least of which would have been the issue of Chorus disposing of its copper network in areas where it was the chosen fibre partner. But if this was the case, then the price agreed would have made the opportunity costs of Chorus' participation in the UFB explicit.

If the FTTH policy was to accelerate the substitution from copper to fibre, then the identity of the owner and operator of the fibre network(s) could never be determined in a common 'competitive tender' process based on price alone. The reason is once again the opportunity cost to Chorus (or indeed any other unbundling investor, had they bid) of participating in the UFB project. This is a cost that would be reflected in the price agreed by CFH with a copper investor that would not be part of the price agreed with a non-copper investor. Implicit in the objective to accelerate the transition from copper to fibre and the concomitant premature closure of the copper network is the 'regulatory taking' from copper investors of their ability to recover the capital and future earnings that they could have legitimately expected to receive had the fibre network not been brought forward[66]. Their price for participation would be the cost of the fibre build plus compensation for regulatory takings[67]. By contrast, non-copper investors would be bidding a price based solely on the fibre build cost.

That the distinction is still not fully appreciated by MBIE officials is evident in the most recent (September 2013) policy discussion document, where they propose that the prices discovered by the CFH tendering process provide the cost of building a modern equivalent (copper) asset for the purposes of calculating LRIC prices for copper access. If the prices include the compensation paid for regulatory takings (i.e. are Chorus prices), then they will not be the correct prices for those areas where Chorus is not the fibre partner. In this case, they overstate the cost of a modern network and will inhibit investment in competing technology when this is economically justified (for example, further unbundling in the remaining 25% of the country where there will not be a fibre network). If they do not include the compensation paid for regulatory takings (i.e. they are non-Chorus prices), then they will be too low and extend the life of the copper network in areas where Chorus is the fibre provider, and thereby militate against the policy objectives of early and rapid substitution.

The issue of regulatory takings is significant in New Zealand because of the 2007 undertaking by Telecom/Chorus to invest $1.5 billion in the FTTN network. This would have been a significant issue for Chorus and CFH in the tender process, and appears to have been recognised by CFH at least, in that it negotiated substantially different agreements with Chorus than with the other UFB partners. It also meant that there were at least three different contexts to

[66] Another curious omission in the New Zealand processes is consideration of the position of (including compensation for) existing owners of other rival fibre and cable networks that are unable to compete with a subsidised government-funded one. This appears to have been another casualty of the firm-based rather than market-based approach to network regulation.

[67] By contrast to New Zealand, the Australian NBN project is explicit about compensation for regulatory takings as part of the government-funded deployment of the fibre network. Nearly one quarter of the A$43 billion budget is to be paid to Telstra and Optus to 'buy them out' of competing with the fibre network using their copper and cable networks (Howell, 2012)..

consider in calculating the costs of the regulatory takings, once it became clear that Chorus would not have a nationwide deal with CFH. In the areas where Chorus was the fibre partner, losses from early closure of the copper network could be traded off against fibre gains. However, in the balance of fibre areas Chorus could not anticipate retaining the custom of existing subscribers switching to networks owned by a rival that would not have occurred if the government had not subsidised the network in the first place. And finally, as the fibre networks would only cover 75% of the market, Chorus had to address the issue of compensation for being required to continue operating a copper network in the highest-cost areas of the country where fibre would not be provided, to be sold at the prevailing nationally-averaged TSO prices, without the subsidies it had previously enjoyed from selling copper services above cost in the areas where the fibre network was being deployed.

The requisite calculations for determining appropriate costs of compensation would have been complex, and necessary for both Chorus and CFH. So long as both could have reasonable certainty about future prices on the cooper network, then a price could be agreed between them with some degree of certainty. This could have been the price in place in May 2011. If there had been some indication of the magnitude and timing of any future changes, then these too could be used to strike a price with some confidence. However, any unexpected change in the regulated copper price would lead to a material revaluation of the compensation paid and received for regulatory takings.

It would have been a legitimate expectation by Chorus that the Crown, as the other party to the CFH-negotiated agreement, and the party ultimately for the regulation of the copper network, had a duty of good faith (if not in contract or law) to ensure that there were no material unexpected variations from the prices at May 2011 when the agreement was struck. Any subsequent action by the government or its agents that led to such an outcome would constitute a material breach of the fibre agreement. From the point that CFH and Chorus agreed terms, the process of setting prices on the copper network could never be considered to be independent of either the fibre network itself, or the specific agreements entered into by CFH for the delivery of the UFB. To have proceeded under any other assumption was the Crown's first substantive (if unwitting) 'breach' of its contractual obligations to Chorus.

2.5 Casting the Regulatory Die

The role of the June 2011 amendments to the Telecommunications Act must now be considered in light of the Chorus-CFH agreements. It is disingenuous for industry parties to suggest that Chorus shareholders knew what the effect of regulation would be when striking the price with

CFH, because the legislation was passed after the fibre deal was agreed. Even if they had been aware of the nature of the changes, if (as has been previously indicated) the regulatory changes were honestly believed to be just tidying up the Act to allow for the structural separation of Telecom and Chorus, then there would have been no reason for undue concern at that time. The legitimate expectation by both Chorus and CFH was probably that it was 'business as usual'.

The underlying problem appears to be that none of the politicians, policy officials or the Commission fully understood the complex interrelationships between the copper access prices at May 2011 and the fibre strategy. Had they done so, it is implausible that they could have proceeded with the Act in the form they did. The copper price was no longer independent. It was irrevocably tied to the New Zealand (government subsidised) fibre price, so it could never be set using cost-based international benchmarking (or even a cost-based price based on New Zealand-specific (though imperfect) UFB-derived prices) without destabilising the UFB project. However, it did proceed comparatively unchallenged. Retailers (including the newly-separated Telecom) likely had few problems at the time, as they would foresee being the beneficiaries of any fall in copper prices, but not adversely affected if prices remained relatively constant. Chorus and its investors were probably initially quite comfortable with the regulatory changes because they were relying upon the government ensuring that there were no future unexpected copper price changes. The same view was probably held by the other UFB partners, as they too had tendered prices in advance of the changes to the Act and likely under the same assumptions as Chorus.

The course was now set for the collision between copper regulation and the UFB project that occurred in December 2012. There were signals that it would occur as a consequence of Commission actions. In several speeches, the Telecommunications Commissioner[68] reiterated that competition would drive New Zealand's fibre uptake, which was consistent with a view that the Commission would continue to regulate copper prices as it had in the recent past. This was further confirmed with the price reductions for UCLL proposed in May 2012. Yet when it did occur, it appears to have taken the industry – and politicians - by complete surprise.

2.6 Political Vacillation

Regardless of the path by which the events of December 2012 came about, it was ultimately the political response to the events – or ultimately the lack of it – that has been most remarkable and most damaging to the industry.

Returning to the premise of 'good faith' underpinning the CFH agreements, it must surely have been foreseen at the political level at least that any material change to the UBA price would

[68] For example, at the Pacific Telecommunications Conference in Honolulu in January 2012.

undermine both the integrity and the substance of the UFB project. Given the willingness of politicians to intervene to bring about the fibre investment in the first place, it is puzzling that there was no equally political directive to ensure that the copper price remained stable. This could have been achieved in June 2011 when the Act was revised. It would equally have been undertaken at any time prior to the December 3 announcement via an explicit (or even implicit) directive to the Commission. Yet no such directive was forthcoming. The shock was allowed to occur, and the industry appears to have interpreted its occurrence (by either design or accident) as a fundamental breach of good faith by the Crown partner in the UFB agreements. Subsequent events appear to confirm this perception.

Even when the shock occurred, the Prime Minister's reaction that he would not rule out intervening came too late. Thus, it was not sufficient to stop the long decline in the Chorus share price, culminating in June 2013. The initial drop was likely less than it might have been simply because the Prime Minister had indicated immediately that intervention was possible. However, the Minister delayed until February 8 before announcing the form of intervention. Furthermore, it was a review brought forward rather than direct intervention to provide any future certainty regarding copper prices. Despite a small initial rally, the Chorus share price continued to fall as the date at which the MBIE discussion document was expected to be released repeatedly got pushed back. The longer the delay, the more plausible became the interpretation that the government may have actually intended to breach the 'good faith' assumed to have underpinned the CFH agreements[69]. The consequence has been the exodus of foreign capital from Chorus. Whilst New Zealand investors may have been able to compensate some of the losses in share value as consumers of potentially lower copper prices or other gains in political trade with the government, foreign investors could not. That is underlined in the Chorus CEO's observation that foreign investment in New Zealand telecommunications markets is now "too hard" – that is, too risky.

2.7 Policy Band-Aids

When the discussion document was finally released in August 2013, it did provide some certainty by clarifying that the political objective was rapid substitution and signalling the bounds within which the copper price was expected to lie. However, it is still predicated upon incremental changes to a backward-looking Act crafted for a very different era. It still claims to be setting cost-based prices, even though the prices it suggests clearly cannot be reflecting only network

[69] It is notable that New Zealand, unlike most other OECD countries, has no legislated provisions covering compensation for regulatory takings (Evans, Quigley & Counsell, 2009). Thus firms such as Chorus have no legal ways of challenging such ministerial actions.

build costs. It is still based upon regulating a single firm, so makes no provision for the different competitive scenarios playing out in different geographic regions. It is silent on the future of copper regulation in areas where fibre will not be deployed.

In sum, therefore, the serious concerns about the ability of the New Zealand government and its officials to either understand the nature of the markets in which they are intervening or undertake to act in good faith with their investment partners have not been assuaged by the policy doocument. Clarity in prices provides certainty in the short run for market participants, but does not instil confidence that the governance arrangements will be robust to future shocks. The political costs of allowing consumers to be led to believe that broadband prices could fall by a large amount and then taking action that means any fall will be much smaller are yet to be counted. But they are not insubstantial.

It will be interesting to observe how the future plays out.

3. A Way Forward for New Zealand?

What is done has been done, and cannot be easily undone. Regardless, a path forward has to be found, as the current and future realities must be dealt with.

A clean and clear way forward for the governance of New Zealand's telecommunications markets will not be easy to implement. It will require an acceptance that much of what was done in the past was, in hindsight, not optimal. From a positive perspective, the fibre network roll-out is ahead of schedule, although connections to it remain very low. However, the issue of how to rationalise the governance of co-existent copper and fibre networks has not yet been resolved. For the short-term at least, it appears as though the 'regulatory silos' will persist. This makes it unclear what responses may emerge if (for example) other broadband technologies become available that compete with the presumed fibre and copper monopolies (e.g. wireless and cellular, especially LTE, in less densely populated areas and for low-volume consumers at least). So it is unlikely that the current regime is sustainable. But the question of how to change it remains open.

It is useful to consider at this point what might have arisen if a full review of the arrangements had occurred in 2011 or earlier. The fundamental premise is that any regulatory change at that point should have been predicated upon a shift from firm-based to market-based principles independent of ownership, and that a single agency should have responsibility for overseeing and calibrating all regulations for effectively competing networks (i.e. all broadband infrastructures considered together within a single agency). Those arrangements would have ensured that at least one participant took responsibility for developing an over-arching industry-wide view of the sector and its future direction.

Arguably, the best approach in 2011 for supporting the fibre deployment whilst not undermining the 'ladder of investment' in non-fibre areas would have been to freeze all copper network agreements in place at that time and use a cpi-x form of price control to set caps on the prices Chorus could charge into the future, for those areas where the fibre networks were planned. This would have rendered all of the current copper regulations obsolete immediately in fibre areas, whilst providing reasonable pricing certainty for all parties (both network and retail operators) to plan investments (including fibre plan development and marketing) during the transition. However, the copper regulatory instruments should have remained in place in those areas where subsidised fibre was not being deployed. There is no reason why the provisions for the review and recalibration to account for structural separation in 2012 could not have proceeded, so long as its findings were applied only in those areas where government-funded fibre was not being deployed. Indeed, these prices should be forward-looking and cost-based, in order to ensure continued unbundling investment in non-fibre areas, so that non-fibre customers will have some possibility of receiving improvements in service quality on their copper connections at the same time as fibre is rolled out to other consumers. Under the current (2113) proposals, setting the price for these consumers at the higher price necessary for substitution to fibre offers no incentives for non-Chorus investment, and exposes these consumers to the classic ongoing risks of monopolistic exploitation and underinvestment.

It is still not impossible for the regulatory regime to be restructured along these lines. However, it cannot be within the statutory framework of the current Telecommunications Act. It needs to be a new Act with sufficient flexibility for the Commission to impose some meaningful changes without needing recourse to new legislation every time the regulatory settings need adjusting. That will necessarily require a revision of the processes by which regulatory actions are reviewable – which is beyond the scope to this paper. But the sooner it is placed on the agenda, the sooner it is likely to be possible to provide a stable and sustainable future-focused framework.

A further matter for consideration is the appropriate role for government to play in telecommunications sector investment. The imperative to build the New Zealand fibre network came from the desire to implement a political 'grand strategy' rather than from a principled assessment that identified a 'failure' (either market or government) warranting intervention. Indeed, the FTTN undertakings between Chorus and the preceding government had ensured that for the most part, New Zealand had addressed the 'investment stand-off' that had emerged in Australia and which is currently challenging regulators in many OECD countries. The complexities of the CFH negotiations were made substantially more complicated, and resulted in

substantially more private capital being 'at risk' than if the FTTN deployment had not been undertaken. It also meant that the UFB investment proceeded without any 'first principles' review of the existing regulatory framework, and thus probably a less clear understanding of the implications than if it had been officials and not politicians who led the call for government investment. This has undoubtedly enabled many important issues relating to the risk for existing owners to be overlooked – with costly financial consequences and likely political ones as well.

This stands as a lesson for opposition politicians making policy commitments regarding regulated industries and then implementing them without first subjecting them to a robust and credible regulatory impact analysis led by impartial assessors. Investment in and regulation of network industries is a highly complex undertaking. It is not well-suited as a subject for populist politicking as the average voter is in no position to be able to weigh up all of the complex issues involved and make a rational decision. Even if it was possible for voters to understand the issues, when amassed with all other issues from which an election manifesto is comprised, it is impossible to know which issues persuaded which voters to support the winning party.

This is not to say that these issues cannot be part of the political conversation – just that if concrete proposals are made, for example to invest in x or regulate y in a particular manner, then the efficacy of the promise should be subject first to a robust independent critique. If the proposal really is to the net benefit of the country, then such a process will confirm it, and the politicians will have nothing to fear. But if it is detrimental, highly complex or fraught with uncertainty, then the process will reveal this information too. If the politicians proceed regardless after the check, then voters can assess the politicians on their decision-making merits and the calibre of their stewardship. If a policy proceeds without such an examination, then any harm will have been done by the time the voters come to learn of the efficacy – or otherwise - of the political action (Wilkinson, 2009).

A review process may also reduce the costs of rash promises imposed on private investors in regulated firms even before the election. In a recent New Zealand case, a policy announced by the opposition to make radical changes to industry structure led to a large fall in the share price of listed firms even though the election was still nearly eighteen months away. A 'credibility check' would reduce the likelihood of harmful policies proceeding unscrutinised, so would lessen the volatility in the share prices of such firms which leads investors to require a higher risk premium.

Of course, if the risks to both private sector investors and government credibility are truly unpredictable under a 'partnership' approach, then it may be simpler to 'clear the decks' by the government buying out the interests of the private sector investors both the copper or fibre

networks – that is 'renationalising' the telecommunications networks (the 'Australian approach'). The government can then take all the risks whilst the fibre networks are built and then subsequently address the issue of privatisation. This does not preclude the use of private capital to build the networks – indeed, it would lend itself to the use of the classic roading PPP, where the private party finances and builds and operates the network on behalf of the government but where the government explicitly assumes responsibility for those aspects of risk that are not within the control of the private party. An 'Australian approach' still remains theoretically an option for the New Zealand industry – but is fraught with other risks, both political and financial.

4. Lessons for Other Countries

The New Zealand experience provides a number of lessons for other jurisdictions contemplating government funding of fibre infrastructure.

The first is that it is imperative that there is a clear understanding of the motivation for the government investment. The strategies and requisite regulatory requirements are very different if the network is intended to accelerate the arrival of infrastructure competition or to rapidly replace the copper network. There must be no doubt that all market participants clearly understand the motivations, as it affects the ways in which they will act subsequently.

The second is the understanding that Government investment in a fibre network is not equivalent to past subsidies for network building, as the fibre network will necessarily foreclose options for existing copper investors, even in areas where infrastructure competition is not envisaged. This inevitably requires the issue of compensation to be addressed. In the past, when there has been only one copper investor who would inevitably be the fibre network operator, then the issue of compensation could be (relatively) easily resolved using bilateral negotiation. However, in an environment where there are multiple copper investors (e.g. via unbundling), it becomes much more difficult to intervene in a 'fair' manner. It is not simply a matter of getting a network built – the alignment of the intervention with existing regulatory incentives must be carefully considered, as does compensation for all parties whose interests are foreclosed by government investment. In Australia as well as New Zealand, the ramifications for unbundling investors have been ignored when considering the issue of compensation for regulatory takings, even though they had invested under a regulatory regime that led to them too investing in the belief that they would be able to recover their investments. The more recent is the investment and the larger it is for any one firm, the more important the issue is. Presumably, the only reason why this has not become problematical in New Zealand has been the comparatively low levels of competitor investment under unbundling arrangements. However, in Australia, potential stranding

of competitor backhaul assets led to a substantial redesign of the points of interconnection into the NBN (Nicholls, 2011).

The third lesson derives from the second. The New Zealand experience suggests that it is not helpful to bundle the processes for identifying the network builder and compensation for foreclosed options into a single process. It is more transparent and fairer for all parties, including taxpayers, to address the issues separately. This avoids confusion about what the payments are for and why specific actions are taken by the respective parties (particularly the government).

The fourth lesson is that nationwide 'grand government investment strategies' cannot be treated in the same manner as localised interventions. Nation-wide strategies in the context of thirty years of privatisation and deregulation are revolutionary and therefore necessitate a complete reassessment of industry regulatory strategy. The New Zealand experience reveals that it is very difficult for a government to become the custodian of sector strategy and mange to co-ordinate all of the elements necessary to run a mixed strategy of public and private financing and operation across both legacy and frontier technologies. The reality is that the government-funded 'grand strategy' amounts at the very least to nationalisation of sector design. It is incompatible with a view that decentralised 'competitive market forces' are governing the evolution of the sector. Whilst the instruments of regulation and operation can be dressed up to look as though they are 'competition', the government and not the industry is in control. If this is clear to all parties, then it is less likely that the gaps in governance, misunderstandings and costly consequences that emerged in New Zealand can be avoided.

In conclusion, therefore, it is appropriate to revisit the reasons why the industry has witnessed thirty years of privatisation alongside liberalisation. There were good reasons in the past for governments subordinating political objectives to financial and economic ones when it came to telecommunications investment. The potential to invest in FTTH has not altered those imperatives. There should still be an onus on government to justify in financial and economic terms why a government should invest in part or all of a new network. The failure to provide one is a breach of its political obligation to voters. Failure to prepare such a case in the manner of the cases prepared by private sector firms to justify their investments is a breach of the government's financial obligations to taxpayers. The cases must be robust both politically and economically. Ultimately it is not simply a matter of who invests, but the principles that govern those investments. If the industry is to proceed forward with confidence, the expectation is that government investors must abide by the same rules as private investors.

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